

**REMARKS**

Claims 1, 3, 4, 6, 7, 9 through 11, 13 through 17, 19, and 21 through 26 are pending in this Application. Claims 1 and 3 have been amended and claims 2, 5, 8, 12, 18, 20 and 27 cancelled. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure noting, for example, that the limitations of claim 2 and 20 have been incorporated into claim 1, and the dependency of claim 3 appropriately changed. Applicant submits that the present Amendment does not generate any new matter issue.

**Claims 1, 11, and 27 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by Makita et al.**

In the statement of rejection the Examiner asserted that Makita et al. disclose a fuel cell corresponding to that claimed, referring to column 2, lines 57 et seq. This rejection is traversed.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 66 USPQ2d 1801 (Fed. Cir. 2003); *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). There is a fundamental difference between the claimed fuel cell and the fuel cell disclosed by Makita et al. that scotches the factual determination that Makita et al. disclose a fuel cell identically corresponding to that claimed.

Specifically, independent claim 1 is directed to a fuel cell wherein at least one of the first electrode and the second electrode is provided with a gas diffusion layer including a modified

cross-section carbon fiber **having a recess in a cross-sectional shape thereof**. No such structure is disclosed or suggested by Makita et al.

The above argued structural difference between the claimed fuel cell and the fuel cell disclosed by Makita et al. undermines the factual determination that Makita et al. disclose a fuel cell identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986). Applicant, therefore, submits that the imposed rejection of claims 1, 11 and 27 under 35 U.S.C. § 102 for lack of novelty as evidenced by Makita et al. is not factually viable and, hence, solicits withdrawal thereof.

**Claims 1, 2, 10 through 19, 21 through 24, 26, and 27 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by McCullough.**

In the statement of rejection the Examiner asserted that McCullough discloses a fuel cell corresponding to that claimed, referring to Figs. 2A-2C. This rejection is traversed.

Again, the factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention, such that the identically claimed invention is placed into the recognized possession of one having ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc.*, *supra*; *Crown Operations International Ltd. v. Solutia Inc.*, *supra*. There are significant differences between the claimed fuel cell and McCullough's fuel cell that scotch the factual determination that McCullough discloses a fuel cell identically corresponding to that claimed.

Specifically, the fuel cell defined in independent claim 1 comprises, *inter alia*, at least one of a first electrode or second electrode provided with a gas diffusion layer which is **processed with a fluororesin to attain water-repellency**. No such structure is disclosed or suggested by McCullough. This structural difference between the claimed fuel cell and McCullough's fuel cell is functionally significant. Specifically, the gas diffusion layer not only has water retention capability for retaining moisture inside, but also exhibits water transference capability for discharging surplus moisture or generated reaction water toward the outside.

The fuel cell in accordance with the present invention improves both water retention capability and water transference capability by employing a gas diffusion layer including a modified cross-section carbon fiber and further processing the gas diffusion layer with a fluororesin. McCullough neither discloses nor suggests the use of a gas diffusion layer including a modified cross-sectioned carbon fiber processed with a fluororesin to achieve water-repellency. By providing water repellency, deposition of water in the gas diffusion layer is prevented so that a gas can be smoothly supplied through the water-repellant region.

Applicant separately argues the patentability of claims 21 through 24, which claims require carbon particles applied to a surface or filled in an interior portion of the gas diffusion layer. No such structure is disclosed or suggested by McCullough.

The limitations of claims 21 through 24 are also functionally significant. This is because by applying carbon fibers to a surface of the gas diffusion layer or filling carbon particles in an interior portion of the gas diffusion layer, a capillary water path of hydrophilic carbon particles is formed. When discharging reacted water produced in the catalyst layer, the capillary path is utilized to guide the water. Since the reacted water produced in the catalyst layer is discharged outside through the gas diffusion layer, it is advantageous to dispose carbon particles in

proximity to an interface of the catalyst layer and the gas diffusion layer, thereby improving water transference capability. Moreover, since the recess is formed on the cross-section of the carbon fiber, the recess serves as a water path, thereby further improving water transference of the gas diffusion layer.

The above argued functionally significant differences between the claimed fuel cell and McCullough's fuel cell undermine the factual determination that McCullough discloses a fuel cell identically corresponding to that claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc., supra; Kloster Speedsteel AB v. Crucible Inc., supra.* Applicant, therefore, submits that the imposed rejection of claims 1, 2, 10 through 19, 21 through 24, 26, and 27 under 35 U.S.C. § 102 for lack of novelty as evidenced by McCullough is not factually viable and, hence, solicits withdrawal thereof.

**Claims 3, 4 through 6, 20 and 25 were rejected under 35 U.S.C. § 102 for lack of novelty, or alternatively under 35 U.S.C. § 103 for obviousness predicated upon McCullough.**

This rejection is traversed.

McCullough neither discloses nor suggests a fuel cell as defined in independent claim 1 upon which the rejected claims depend, which fuel cell contains a gas diffusion layer including a modified cross-section carbon fiber processed with a fluororesin to achieve water-repellency. Moreover, there is no factual basis upon which to predicate the conclusion that one having ordinary skill in the art would have been realistically motivated to modify McCullough's fuel cell to arrive at the claimed invention, absent improper reliance upon Applicant's disclosure. *Panduit Corp. v. Dennison Mfg. Co., 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985).*

The Examiner committed clear legal error in ignoring the claim limitation requiring water repellency. This is a characteristic of the gas diffusion layer and, hence, a structural limitation. Moreover, that structural limitation provides definite functional advantages as previously pointed out. The Examiner simply cannot ignore this claim limitation. *In re Garnero*, 412 F.2d 276, 162 USPQ 221 (CCPA 1969).

Applicant, therefore, submits that the imposed rejection of claims 3, 4 through 6, 20 and 25 under 35 U.S.C. § 102 for lack of novelty, or alternatively under 35 U.S.C. § 103 for obviousness predicated upon McCullough is not factually or legally viable and, hence, solicits withdrawal thereof.

**Claims 7 through 9 were rejected under 35 U.S.C. § 103 for obviousness predicated upon McCullough.**

This rejection is traversed. Claims 7 through 9 dependent from independent claim 1. Applicant incorporates herein the arguments previously advanced in traversing the imposed rejection of claim 1 under 35 U.S.C. § 102 for lack of novelty as evidenced by McCullough. The Examiner's additional comments do not cure the previously argued deficiencies of McCullough.

Further, as to the ratio, the Examiner has failed to point out wherein the applied prior art recognizes the ratio as a result effective variable. Accordingly, the Examiner's optimization theory is legally erroneous. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *In re Yates*, 663 F.2d 1054, 211 USPQ 1149 (CCPA 1981); *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).

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Applicant, therefore, submits that the imposed rejection of claims 7 through 9 under 35 U.S.C. § 103 for obviousness predicated upon McCullough is not factually or legally viable and, hence, solicits withdrawal thereof.

Based upon the foregoing it should be apparent that the imposed rejections have been overcome and that all pending claims are in condition for immediate allowance. Favorable consideration is, therefore, solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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